

A REVISION OF CALIFORNIAN UMBELLIFERAE.—II

WILLIS LINN JEPSON

(Continued from page 114)

Locs.—Coast Ranges: Crane Creek, w. Tehama Co., *Jepson*; Buck Mt., Humboldt Co., *Tracy* 3943; Middleton Grade, Mt. St. Helena, *Jepson*; Calistoga, *Jepson*; St. Helena, *Jepson*; Clayton, Contra Costa Co., *Chestnut & Drew*; Mt. Day, *R. J. Smith*; Isabel Creek, Mt. Hamilton Range, *Chandler* 6035. Sierra Nevada: Pine Ridge, Lassen Co., *Baker & Nutting*; Warner Valley, Plumas Co., *Jepson* 4067; Deer Creek Ridge, Nevada Co., *Jepson*; Donner Lake, *Heller* 6928; Blue Cañon, Placer Co., *Harriet Walker* 1300; Armstrong sta., Amador Co., *Hansen* 1117; Gwin Mine, Calaveras Co., *Jepson* 1805; Belle Mdw., Tuolumne Co., *Jepson* 6490; Pine Ridge, Fresno Co., *Hall & Chandler* 183. Southern California: Reche Cañon near Colton, *Parish* (plant 26 inches high); Pasadena, *McClatchie* 3; Foster, San Diego Co., *T. Brandegee* (2 feet high).

Refs.—*SANICULA TUBEROSA* Torr. Pac. R. R. Rep. 4:91 (1857), type loc. Duffield's Ranch, Confidence, Tuolumne Co., *Bigelow*; *Jepson*, Fl. W. Mid. Cal. 346 (1901); *Wolff* in *Engler*, *Pflzr.* 4²²⁸:78, fig. 16 (1913).

11. *S. saxatilis* Greene. Stems several, branching and widely spreading from the base, 4 to 7 inches long; root a very thick and fleshy tuber, more or less elongated or irregular; ultimate leaf segments broad, coarsely toothed; flowering branches repeatedly dichotomous; flowers straw color; upper tubercles on the fruit tipped with a reduced subulate and somewhat hooked bristle; otherwise like *S. tuberosa*.—Rocky crests, Mt. Diablo.

Loc.—Summit of Mt. Diablo, *Jepson* 9207 (odor very intense and penetrating).

Refs.—*SANICULA SAXATILIS* Greene, *Erythea* 1:6 (1893), type loc. Mt. Diablo, *Greene*.

3. ANTHRISCUS Bernh.

Annual herb. Leaves bipinnate with bipinnatifid leaflets, the upper leaves reduced. Flowers white. Umbels compound, lateral, shortly peduncled or sessile. Rays few. Involucre none. Involucel of few lanceolate bractlets. Fruit somewhat laterally compressed, ovate, shortly beaked, curved with short hooked bristles. Ribs and oil tubes none or obscure. (Greek anthriscus, its etymology unknown.)

1. *A. vulgaris* (L.) Pers. BUR CHERVIL. Slender, 1½ to 3 feet high; rays 3 to 6, ½ to 1 inch long; pedicels 1 to 3 lines long; fruit 1¾ lines long.—Adventive European weed.

Locs.—St. Helena, *Clara A. Hunt* in 1908; Jolon, *K. Brandegee* in 1909.

Refs.—*ANTHRISCUS VULGARIS* Pers. Syn. 1:320 (1805). *Scandix anthriscus* L. Sp. Pl. 257 (1753), type European. *A. anthriscus* Karst. Deutsch. Fl. 857 (1880-83).

4. SCÁNDIX L.

Annuals with dissected decompound leaves. Flowers white, polygamous, in compound umbels. Staminate flowers with stamens and green disk, and occasionally with short styles; pistillate flowers with long styles, purple disk and with or without stamens. Rays commonly 2, rarely 1 or 3. Involucre none or of one bract. Involucels of several bractlets. Petals unequal, the outer larger. Fruit linear, flattened laterally, muriculate, prolonged into a beak several times longer than the body. Ribs prominent. Oil-tubes none. Seed-face sulcate. (The Greek name.)

1. *S. pecten-veneris* L. SHEPHERD'S NEEDLE. Fig. 9. Erect, simple or branching, 5 to 16 inches high, somewhat hispidulous; leaves 2 or 3 times pinnately dissected into linear acute segments less than ½ line wide; bractlets 2 or 3-toothed at apex or entire; rays ½ to 1 inch long; pedicels very short; body of fruit 4 lines long, bearing a straight flattish beak 1¾ inches long, its edges hispidulous.—San Francisco Bay region; naturalized from Europe.

Locs.—St. Helena, *Eastwood* in 1900; Santa Rosa, *Eastwood* in 1893; Napa Junction, *Jepson* 9625 in 1922; Olema, *Jepson* in 1910, Berkeley, *Jepson* in 1891.

Refs.—*SCÁNDIX PECTEN-VENERIS* L. Sp. Pl. 256 (1753), type European; *Jepson*, Fl. W. Mid. Cal. 346 (1901).

5. OSMORRHIZA Raf. SWEET CICELY

Perennials with thick aromatic roots. Leaves mostly basal, 2 to 3 times, ternately compound. Flowers white, in compound umbels. Calyx teeth obsolete.



9. *Scandix pecten-veneris* L.; a, fr. branchlet x $\frac{1}{2}$; b, fr. x $\frac{1}{2}$; c, carpel x $\frac{1}{2}$; d, sect. carp. x 10.

7 to 9 lines long, the ribs armed with bristles pointed upward; seed-face deeply concave or even involute.—Sierra Nevada, 3000 to 5000 feet, from Sierra Co. to Tulare Co.; South Coast Ranges from Santa Clara Co. to Santa Barbara Co.; cismontane Southern California.

Locs.—Sierra Nevada: Downieville (Pac. R. Rep. 4⁵:93); Hetch-Hetchy, *Hall & Babcock* 3379; Hazel Green, Yosemite Park, *Jepson*; Huntington Lake, Fresno Co., *A. L. Grant* 1173; Tehipite Valley, *Hall & Chandler* 473; Cedar Creek, North Fork Kaweah River, *Jepson* 607; Bear Creek, North Fork Tule River, *T. Brandegee*. Southern California: Cuyamaca, *Abrams* 3838; Witch Creek, *Alderson*; Palomar, *Jepson* 1527; Mill Creek Cañon, San Bernardino Mts., *Jepson* 5572; Millards Cañon, San Gabriel Mts., *Peirson* 135; Ojai Valley, *Hall* 3245. South Coast Ranges: Ft. Tejon, *Davy* 2337; Santa Ynez Mts., *Dunn*; betw. King City and Jolon, *Eastwood*; upper Nacimiento River, *Jepson* 1693; Big Sur, Santa Lucia Mts., *Davy* 7432; Alum Rock, Mt. Hamilton Range, *Pendleton* 668.

Refs.—OSMORRHIZA BRACHYPODA Torr.; Dur. Jour. Acad. Phil, ser. 2, 3:89 (1855), type loc. Deer Creek near Nevada City, *Pratten*; *Jepson*, Fl. W. Mid. Cal. 347 (1901). *Washingtonia brachypoda* Heller, Cat. N. Am. Pl. 5 (1898); C. & R. Contrib. U. S. Nat. Herb. 7:63, fig. 7 (1900).

2. *O. nuda* Torr. Fig. 10. Stem glabrous, $1\frac{1}{2}$ to $2\frac{1}{2}$ feet high or less; leaves 5 to 11 inches long, the cauline much reduced; petioles with short stiff spreading hairs, the leaflets more or less hispidulous; leaflets ovate or elliptical, 3-lobed or -cleft and serrate, often narrowly or broadly cuneate at the entire base, $\frac{1}{2}$ to $2\frac{1}{2}$

Involucre reduced or obsolete. Involucels present or none. Fruit linear or linear-oblong, rather prominently attenuate at base, glabrous and smooth or bristly along the ribs; carpels pentagonal in cross section, with equal ribs. Oil-tubes none in mature fruit. Seed-face concave to very deeply sulcate. (Greek osme, odor, and rhiza, root.)

Fruit with bristly ribs; carpel long-attenuate at base (except No. 1).

Involucels of several bractlets 1. *O. brachypoda*.

Involucels none.
Fruit beaked or constricted at apex 2. *O. nuda*.

Fruit obtuse at apex 3. *O. obtusa*.

Fruit ribs not bristly; carpel not attenuate (mostly obtuse) at base.

Fruiting rays usually erect, forming a compact cluster of fruits; leaflets oblong-lanceolate 4. *O. occidentalis*.

Fruiting rays spreading, forming a loose umbel; leaflets ovate 5. *O. bolanderi*.

1. *O. brachypoda* Torr. Erect, $1\frac{1}{2}$ to $1\frac{3}{4}$ feet high, glabrous or strigose puberulent; leaflets coarsely lacinate-cleft and serrate, mucronulate, $\frac{3}{4}$ to 2 inches long; umbel 1 to 5-rayed, the fruiting rays 2 to 4 inches long; pedicels 1 line long; involucre mostly absent; involucels of linear acuminate bractlets; fruit

inches long; rays 3 or 4 (to 6), 2 to 4 inches long; pedicels 3 to 8 lines long; involucls none; fruit 5 to 8 lines long, attenuate into a slender base $\frac{1}{4}$ to $\frac{1}{2}$ as long as the body, and at apex more or less contracted into a beak $\frac{1}{2}$ to 1 line long; attenuate base of fruit very bristly, the body upwardly bristly on the ribs; seed-face sulcate.—Shady woods: cismontane Southern California; Coast Ranges mostly near the coast, 100 to 2000 ft.; Sierra Nevada, 4000 to 6000 ft., from Tulare Co. to Placer Co. The most common species.

Locs.—Southern California: Stonewall Mine, Cuyamaca Mts., *Parish* 4421; San Bernardino Mts. (Pl. World, 20:247); San Antonio Mts. (Pl. World, 22:111). Coast Ranges: Big Creek, Santa Lucia Mts., *K. Brandegee*; Santa Cruz Mts., *Jepson*; Mt. Diablo, *Jepson*; Mt. Tamalpais, *Jepson* (pedicels 5 to 11 lines long); St. Helena, *Jepson*; Napa Co., *John Benson*; Comptche, *Harriet Walker* 369; Eureka, *Tracy* 2464; mouth of Willow Creek, Trinity River, *Tracy* 3322; Quartz Valley, Siskiyou Co., *Butler* 1453. Sierra Nevada: Old Colony Mill, Sequoia Park, *Jepson* 637; Pine Ridge, Fresno Co., *Hall & Chandler* 331; Yosemite, *Hall* 9223; Calaveras Big Trees, *A. L. Grant*; Eagle Mds., Tuolumne Co., *A. L. Grant* 373; Silver Creek, El Dorado Co., *Kennedy* 56; Blue Lake, Warner Mts., *L. S. Smith* 1003.

Var. *BRÉVIPES* *Jepson* n. comb. Leaflets puberulent or strigose; pedicels $1\frac{1}{2}$ to 3 lines long.—Tuolumne Co. to Siskiyou Co. Scarcely more than a formal variety.

Locs.—Confiende, Tuolumne Co., *Jepson* 7708; Plumas Co., *Cleveland*; Bear Valley, Nevada Co., *Jepson*; Sisson, *Jepson*.

Var. *DIVARICATA* *Jepson* n. comb. Nearly glabrous, but variable in this respect and scarcely of varietal rank.—Placer Co. to Tehama Co. and northward.

Locs.—Tallac, *Jepson* 8087; Morgan, Tehama Co., *Hall & Babcock* 4408b.

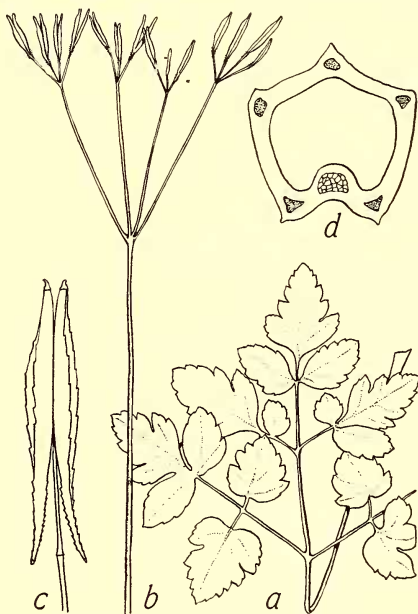
Refs.—*OSMORRHIZA NUDA* Torr. Pac. R. Rep. 4⁵:93 (1857), type loc. Napa Valley, *Bigelow*; *Jepson*, Fl. W. Mid. Cal. 347 (1901). *Washingtonia nuda* Heller, Cat. N. Am. Pl. 5 (1898). *Urospermum nudum* Ktze., Rev. Gen. Pl. 1:270 (1891). *Myrrhis nuda* Greene, Man. Bay Reg. 157 (1894). Var. *BREVIPES* *Jepson*. *O. brevipes* *Jepson* in herb. *Washingtonia brevipes* C. & R. Contrib. U. S. Nat. Herb. 7:66 (1900), type loc. Mt. Shasta and vicinity, *Palmer* 2481. Var. *DIVARICATA* *Jepson*. *Washingtonia divaricata*, Britt. Ill. Fl. 2:531 (1897), type from Ore., *Nuttall*.

3. *O. obtusa* Fer. Resembles *O. nuda*, but more slender, 1 to $1\frac{1}{2}$ feet high; herbage almost glabrous; rays widely spreading or the lateral deflexed; fruiting pedicels 2 to 4, divaricate, 6 to 8 lines long; fruit 5 to $7\frac{1}{2}$ lines long, obtuse or slightly pointed at the tip, less bristly.—Northern Sierra Nevada; east to the Rocky Mts. and north to British Columbia.

Loc.—Sierra Co. acc. *Coulter & Rose*.

Refs.—*OSMORRHIZA OBTUSA* Fer., Rhod. 4:154 (1902). *Washingtonia obtusa* C. & R. Contrib. U. S. Nat. Herb. 7:64 (1900), type loc. Ishawood Creek, Wyo., *Rose* 476.

4. *O. occidentalis* Torr. SIERRA SWEET CICELY. Plants 2 to $3\frac{1}{2}$ feet high;



10. *Osmorrhiza nuda* Torr.; a, leaf x $\frac{1}{3}$; b, umbel x $\frac{1}{3}$; c, fr. x $2\frac{1}{2}$; d, sect. carp. x 18.

herbage minutely puberulent or nearly glabrous; leaflets oblong-lanceolate (or rarely ovate), serrate or sparingly incised, 1 to $1\frac{1}{2}$ (or $2\frac{1}{2}$) inches long, some of them obliquely lobed on one side by a deep incision toward the base; rays 5 to 12, in fruit erect (1 to $2\frac{1}{4}$ inches long) and forming a close or compact umbel; pedicels $1\frac{1}{2}$ to 4 lines long; bracts 1 or 2 or none; stylopodium conical, about equaling the style; fruit 6 to 7 lines long, acutish at apex or obscurely short-beaked, with prominent acute not bristly ribs; seed-face very concave.—Sierra Nevada, 4000 to 8500 feet, from Madera Co. to Siskiyou Co., thence southerly to Mendocino Co. North to Alberta.

Locs.—Potter Valley, *Purpus*; Buck Mt., Humboldt Co., *Tracy* 4238; Shackelford Creek, w. Siskiyou Co., *Butler* 1668; Dorleska, Salmon Mts., *Hall* 8665; Eagle Peak, Warner Mts., *Jepson* 7960; Morgan, Tehama Co., *Hall & Babcock* 4408a; Webber Lake, *S. B. Doten*; Summit, Nevada Co., *Jepson*; Pyramid Peak, *Hall & Chandler* 4757; Silver Creek, El Dorado Co., *Kennedy* 72; Kennedy Lake, Tuolumne Co., *A. L. Grant* 202; Rancheria Mt., *Jepson* 4592; Bloody Cañon, Mono Co., *Chestnut & Drew*; San Joaquin Pass, Madera Co., *Congdon*.

Refs.—OSMORRHIZA OCCIDENTALIS (Nutt.) Torr. Bot. Mex. Bound. 71 (1859); *Jepson*, Fl. W. Mid. Cal. 347 (1901). *Glycosma occidentalis* Nutt. T. & G. Fl. 1:639 (1840), type loc. Blue Mts., Ore., *Nuttall*. *Myrrhis occidentalis* B. & H. Gen. Pl. 1:897 (1867). *Washingtonia occidentalis* C. & R. Contrib. U. S. Nat. Herb. 7:67 (1900).

This species probably includes *O. ambigua* C. & R. Rev. N. Am. Umbell. 119,—1888 (*Glycosma ambiguum* Gray, Proc. Am. Acad. 8:386,—1872, type loc. foot of Cascade Mts., Ore., *Hall*; *Myrrhis ambigua* Greene, Fl. Fr. 332,—1892). The fruits on plants from the Cascade Mts., Wash. (Goat Mt., *Allen* 256, rays spreading; Mt. Adams, *Suksdorf*, rays erect) do not differ from those of the Californian *O. occidentalis*, while the herbage in these spms. is scarcely more glabrous than in *Butler* 1668 (Shackelford Creek, Siskiyou Co.) or *Hall* 8665 (Salmon Mts.).

5. *O. bolanderi* (Gray) *Jepson* n. comb. Stems stout, 3 feet high; herbage more or less puberulent, somewhat more pubescent at the nodes; leaflets broadly ovate, coarsely toothed, 1 to 2 inches long; fruiting rays spreading, $1\frac{1}{2}$ to 3 inches long; fruit 8 to $9\frac{1}{2}$ lines long, with a stout short beak; stylopodium flat, shorter than the style; seed-face deeply sulcate.—Mendocino Co. to Siskiyou Co.

Locs.—Cahto, acc. *Coulter & Rose*; Long Gulch near Yreka, *Butler* 455. Apparently includes also Lost Lake trail, Warner Mts., *L. S. Smith* 8019.

Refs.—OSMORRHIZA BOLANDERI *Jepson*. *Myrrhis bolanderi* Gray, Proc. Am. Acad. 7:346 (1868), type loc. Lambert Lake, Mendocino Co., *Bolander*. *Osmorrhiza occidentalis* var. *bolanderi* C. & R. Rev. N. A. Umbell. 119 (1888). *Washingtonia bolanderi* C. & R. Contrib. U. S. Nat. Herb. 7:68 (1900).

6. DAUCUS L.

Bristly or hispid annuals or biennials with dissected decompound leaves and white flowers. Umbels compound, concave, surrounded by cleft bracts and borne on long peduncles. Involucels of entire or toothed bractlets. Calyx-teeth obsolete. Fruit somewhat flattened dorsally. Primary ribs slender, bristly; secondary ribs with a single row of prominent barbed prickles. Oil-tubes as in *Caucalis*. (*Daukos*, the Greek name.)

Involucre divided into short linear or lanceolate segments; rays mostly 2 to 6 lines long. 1. *D. pusillus*.

Involucre divided into elongated filiform segments; rays 1 to $2\frac{1}{2}$ in long. 2. *D. carota*.

1. *D. pusillus* Michx. RATTLESNAKE WEED. Plants 4 to 7 (or 22) inches high; stems and peduncles retrorsely hispid; leaves finely dissected into linear segments; rays mostly 2 to 6 lines long, sometimes as much as 1 or $1\frac{1}{2}$ inches long, somewhat unequal; pedicels very unequal, commonly 1 or 2 lines long or almost wanting; fruit $1\frac{1}{2}$ to 2 lines long.—Throughout cismontane California in the hill country. Eastward to the Carolinas and north to British Columbia. Apr. The herbage is in rural repute as an antidote for the bite of the rattlesnake, whence "Yerba del Vibora" of the Spanish-Californians.

Locs.—Mariposa Co. foothills (*Zoe* 3:29); Amador region, acc. *Hansen*; Marys-

ville Buttes, *Copeland* 3354; Martins Ranch, South Fork Trinity River, *Jepson* 2021; Redwood Creek, Humboldt Co., *Jepson* 1963; mouth of Little River, *Tracy* 2579; Comptche, *Harriet Walker*; San Francisco, *Greene*; Arroyo Grande, *Alice King*; Estrella plain, *Barber*; Ojai Valley, *F. W. Hubby*; North Pomona, *Braunton* 245; San Jacinto River Cañon, *Hall* 1818.

Refs.—*DAUCUS PUSILLUS* Michx. Fl. Bor. Am. 1:164 (1803), type from the Carolinas; C. & R. Contrib. U. S. Nat. Herb. 7:249, fig. 65 (1900); *Jepson*, Fl. W. Mid. Cal. 347 (1901).

2. *D. carôta* L. CARROT. Biennial; stems erect, branching, hispid, 2 to 3 feet high; root fleshy, conical; leaves many times dissected into small linear or lanceolate segments; segments of the involucre linear-lanceolate or subulate; rays numerous, 1 to 2 inches long in fruit; umbels in fruit concave and like a bird's nest; fruit 2 lines long.—European cultivated plant, an escape from gardens, locally naturalized in valley lands.

Locs.—Alameda, *Jepson*; Alvarado, *Jepson*; Monterey, *Jepson*; Los Angeles (*Erythra* 1:59); Rivera, *Braunton* 284; Claremont, *Chandler*; San Bernardino (*Zoe* 1:27).

Refs.—*DAUCUS CAROTA* L. Sp. Pl. 242 (1753), type European; *Jepson*, Fl. W. Mid. Cal. 348 (1901).

7. TÓRILIS L.

Erect slender annuals with hispidulose herbage, bipinnate leaves and white flowers in subcapitate umbels. Involucre and involucels of linear bracts. Fruit with the secondary ribs more prominent than the primary and bearing a row of bristles or tubercles; bristles rough, hooked at tip. Oil-tubes solitary, 2 on the commissure. (Derivation unknown.)

1. *T. nodôsa* (L.) Gaertn. KNOTTED HEDGE PARSLEY. Erect, 7 to 13 inches high, the stems with few branches, retrorsely scabrous; leaves pinnate (lower 3 to 5 inches long including petiole, the upper successively shorter); leaflets bipinnately dissected; umbels scattered along the stems opposite the leaves, on very short peduncles (1 or 2 lines long), simple or with a supplementary short proliferous umbel; fruits $1\frac{1}{2}$ to 2 lines long, those on the outside of the umbel with the exterior carpel densely covered with hooked bristles, the inner carpels as well as the inner fruits warty and without prickles.—Native of Europe, naturalized in California, now widely spread and locally common on openly wooded hills.

Locs.—Oak Run, Shasta Co., *Baker & Nutting* in 1894; Little Chico Creek, *R. M. Austin* in 1883; College City, *Alice King* in 1905; Vacaville, *Jepson* in 1891; French Camp, *Sanford* in 1890-91; Auburn, *Shockley* in 1886; Ione, *Braunton* in 1904; Gwin Mine, Calaveras Co., *Jepson* 1817 in 1902; Columbia, *Jepson* 6350 in 1915; Pine Log, Tuolumne Co., *A. L. Grant* 705 in 1916; Sausalito, *Bioletti* in 1891; Berkeley, *H. A. Walker* in 1907; Arroyo Grande, *Alice King* in 1895; Mt. Firmin near San Pedro, *A. Davidson* in 1914.

Refs.—*TORILIS NODOSA* Gaertn. Fruct. 1:82, t. 20, f. 6 (1788). *Tordylium nodosum* L. Sp. Pl. 240 (1753), France, Italy. *Caucalis nodosa* Huds. Fl. Angl. ed. 2, 114 (1778); *Jepson*, Fl. W. Mid. Cal. 348 (1901).

8. CAÚCALIS L.

Annuals with decomposed leaves dissected into small segments. Flowers white. Umbels more or less irregularly compound. Calyx-teeth prominent. Fruit flattened laterally. Primary ribs 5, filiform, bristly; secondary ribs 4, prominent, winged, bearing barbed or hooked prickles. Oil-tubes solitary in the intervals, i.e., under the secondary ribs, 2 on the face. (Kaukalis, the Greek name.)

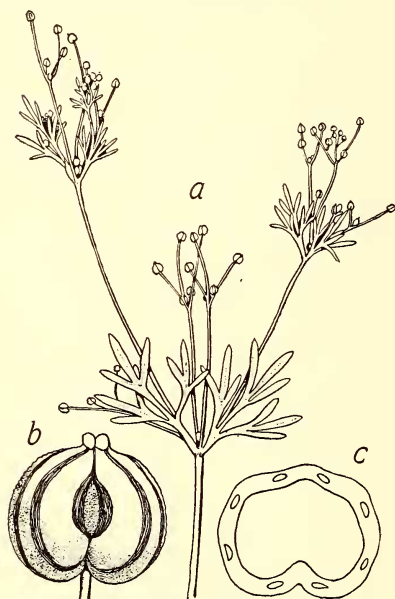
1. *C. microcárpa* H. & A. Fig. 11. Erect, slender, 6 to 12 inches high; leaves 2 or 3 times ternate and much dissected, slightly hispid; umbels unequally 3 to 5-rayed; rays 1 to $3\frac{3}{4}$ inches long; pedicels 8 lines long or less; involucre of foliaceous dissected bracts; involucels of entire or somewhat divided bractlets; fruit oblong, 2 lines long, armed with rows of hooked prickles.—Coast Ranges and Sierra Nevada, widely distributed but not common. North to Washington, and south to Arizona and Mexico.

Locs.—San Diego, *Dunn*; Fallbrook, *Abrams* 3318; Reche Cañon near Colton, *Parish*; Menifee, Riverside Co., *Alice King*; Eaton Cañon, San Gabriel Mts., *Peirson* 132; Ft. Tejon, *Davy* 2372; Arroyo Grande, *Alice King*; New Idria, *Brewer* 801; Los Gatos, *Heller* 7469; Vaca Mts., *Jepson*; Scotts Valley, Lake Co., *Tracy* 1705; Round Valley, Mendocino Co., *Bolander* 4699; Humboldt Bay, *Tracy* 2454; Hupa, *Chandler* 1315; Crane Creek, w. Tehama Co., *Jepson*; Morley's sta., Shasta Co., *M. S. Baker*; Little Chico Creek, *R. M. Austin*; Limekiln Creek, Tulare Co., *Jepson* 2801.

Refs.—CAUCALIS MICROCARPA H. & A. Bot. Beech. 348 (1840), type from Cal., *Douglas*; *Jepson*, Fl. W. Mid. Cal. 348 (1901); C. & R. Contrib. U. S. Nat. Herb. 7:70, fig. 8, (1900).

9. APIÁSTRUM Nutt.

Small branching glabrous annual with dissected leaves. Flowers small, white, in irregularly compound umbels. Rays and pedicels unequal. Involucre



12. *Apiastrum angustifolium* Nutt.; a, umbels x 1; b, fr. x 10; c, sect. carp. x 10.

papillate-roughened all over; ribs inconspicuous.—Dry mountain slopes or sandy valleys: Coast Ranges, Sierra Nevada and cismontane Southern California. Lower California. Apr.-May.



11. *Caulalis microcarpa* H. & A.; a, leaf x $\frac{1}{2}$; b, umbel x $\frac{1}{2}$; c, fr. x 4; d, sect. carp. x 7.

and involucre none. Calyx-teeth wanting. Fruit somewhat laterally compressed, elliptic-cordate, more or less tuberculate. Oil-tubes solitary in the intervals, 2 on the commissure. Seed-face narrowly concave. (*Apium*, celer, and aster, Latin suffix meaning wild.)

1. *A. angustifolium* Nutt. Fig. 12. Erect, di- or trichotomously branched from the base, 4 to 8 (or 15) inches high; leaves opposite below, twice or thrice ternately dissected into linear segments $\frac{1}{2}$ to 1 inch long; umbels sessile in the forks or opposite the upper leaves, consisting of 2 or 3 umbellets borne on unequal rays (1 inch long or less), and of 1 or 2 usually sessile or sometimes pedicel flowers in the center; umbellets 3 or 4-flowered, the pedicels unequal ($4\frac{1}{2}$ lines long or less) or 1 flower sessile; fruit cordate, broader than high, less than 1 line long,

Locs.—Coast Ranges: Hough's Sprs., n. Lake Co., *Jepson* 9020; Vaca Mts., *Jepson*; Conn Valley, Napa Range, *Jepson*; Mt. Diablo, *Rattan*; Mt. Tamalpais, *K. Brandegee*; Eva sta., Santa Cruz Mts., *Jepson*; Milpitas Ranch, Santa Lucia Mts., *Eastwood*; Alcalde, *Eastwood*. Sierra Nevada: Folsom, *K. Brandegee*; Comanche, Amador Co., *Hansen*; betw. Valley Sprs. and Mokelumne Hill, *F. E. Blaisdell*. Southern California: Henniger's Flats, San Gabriel Mts., *Peirson* 133; Garvanza, *Braunton*; San Bernardino, *Parish*; Catalina Isl., *Gambel*; Pala, *Jepson* 8497.

Refs.—APIASTRUM ANGUSTIFOLIUM Nutt. T. & G. Fl. 1:644 (1840), type loc. San Diego, *Nuttall*; *Jepson*, Fl. W. Mid. Cal. 349 (1901).

10. HYDROCOTYLE L.

Perennial glabrous herbs, the peduncles and leaves from creeping stems or rootstocks. Leaves simple, round in outline, long-petioled. Flowers in a small simple umbel, or disposed in 2 or more umbels which are proliferous one above the other. Fruit flattened laterally, suborbicular, the dorsal rib prominently margined and with one or 2 filiform ribs on each side. Oil-tubes none. (Greek hudor, water, and cotyle, a low vessel, the peltate leaves of some species being saucer-shaped.)

- Leaves not peltate, 5 or 6-cleft; umbels simple. 1. *H. ranunculoides*.
 Leaves peltate, more or less crenate.
 Umbels simple, fruit notched at base and apex. 2. *H. umbellata*.
 Umbels proliferous, forming an interrupted spike.
 Fruit not notched at base, sessile or on very short pedicels. 3. *H. verticillata*.
 Fruit notched at base, the pedicels $1\frac{1}{2}$ to 7 lines long. 4. *H. prolifera*.

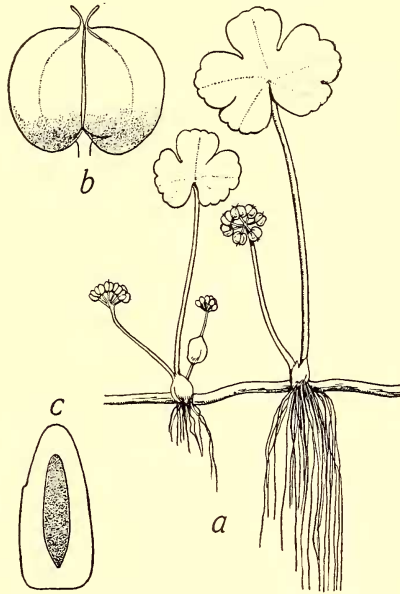
1. *H. ranunculoides* L. f. WATER PENNYWORT. Fig. 13.

Stems floating or creeping in mud, rooting at the nodes; leaves orbicular, ($\frac{3}{4}$ or 1 to $1\frac{3}{4}$ inches broad, 5 or 6-cleft, the lobes crenulate; petioles 3 to 5 (or 9) inches long; peduncles $\frac{1}{2}$ to $2\frac{1}{2}$ inches long, reflexed in fruit; pedicels $\frac{1}{2}$ line long; fruit ovoid, 1 line broad; ribs obscure.—Pools or muddy shores, often floating in rather deep water: South Coast Ranges to Southern California; thence east to the Atlantic.

Locs.—Butano Creek, San Mateo Co., *Jepson* 4161; Milpitas, *R. J. Smith*; San Jose, *Jepson*; Moss Ldg., Monterey Co., *Abrams* 4056; Victorville, *Jepson* 5608; Thomas Valley, San Jacinto Mts., *Hall* 2168; Warner Ranch, San Diego Co., *T. Brandegee*.

Refs.—HYDROCOTYLE RANUNCULOIDES L. f. Suppl. 177 (1781), type loc. Mexico; *Jepson*, Fl. W. Mid. Cal. 342 (1901). *H. natans* Cyr. Pl. Rar. Neap. 1:20, pl. 605 (1892).

2. *H. umbellata* L. Petioles and peduncles subequal, $1\frac{1}{2}$ to 4 (or 6) inches high, arising from slender creeping rootstocks with descending branches bearing round tubers; leaves orbicular-peltate, crenate, 4 to 7 (or 14) lines broad; umbels many-flowered, simple (rarely slightly proliferous); bracts of involucre short, ovate; pedicels $1\frac{3}{4}$ to 6 lines long; fruit $\frac{3}{4}$ to 1 line long, strongly notched at base



13. *Hydrocotyle ranunculoides* L. f.; a, habit x $\frac{1}{2}$; b, fr. x 6; c, sect. carp. x 12.

and apex; dorsal rib prominent but obtuse.—Southern California. Southward into Mexico, eastward to the Atlantic.

Locs.—Los Angeles River, *Braunton* 533; Buena Park, Orange Co., *C. W. Hamlin*; San Bernardino, *Parish* 920, 6463; Rancho Verde, sw. Mohave Desert, *Parish* 9704.

Refs.—HYDROCOTYLE UMBELLATA L. Sp. Pl. 234 (1753), type North America.

3. *H. vérticillata* Thunb. Similar in habit to *H. umbellata*; umbels forming an interrupted spike of 3 to 5 whorls; fruit shortly pediceled or sessile.—Southwest Colorado Desert (C. R. Orcutt). East to the Atlantic.

Var. *CUNEATA* Jepson n. comb. Fruits abruptly short-acute at base.—Southern California to the Great Valley: Jamul, San Diego Co., *Orcutt*; Santa Barbara (acc. Coulter & Rose); Suisun Marshes, *Jepson*.

Refs.—HYDROCOTYLE VERTICILLATA Thunb. Diss. 2:415, pl. 3 (1800). Var. *CUNEATA* Jepson. *H. cuneata* C. & R. Contrib. U. S. Nat. Herb. 7:28, fig. 1 (1900), type loc. Montezuma Well, Ariz., *McDougall* 575; *Jepson*, Fl. W. Mid. Cal. 288 (1911).

4. *H. prolifera* Kell. MARSH PENNYWORT. Peduncles and petioles subequal, 6 to 12 inches high; descending branches of the rootstock tuberous-enlarged; leaves orbicular-peltate, emarginate at base, slightly crenate, $1\frac{1}{4}$ to $1\frac{3}{4}$ inches broad; umbels proliferous, one above the other in 2 to 4 whorls; pedicels 1 to 3 lines long; mature fruit 1 line long and slightly broader, slightly notched at base and apex.—Marshes of the lower Sacramento and San Joaquin rivers, thence west to San Francisco and Sonoma counties. Possibly represented in Arizona.

Locs.—Bouldin Isl. (*Zoe*, 4:214); Santa Rosa, *M. S. Baker*.

Refs.—HYDROCOTYLE PROLIFERA Kellogg, Proc. Cal. Acad. 1:15 (1854); type loc. about San Francisco, *Kellogg*; *Jepson*, Fl. W. Mid. Cal. ed. 2:288 (1911).

11. BOWLESIA R. & P.

Delicate annuals with stellate pubescence, opposite simple leaves and scarious lacerate stipules. Umbels simple, few-flowered, on short axillary peduncles. Flowers white, minute. Calyx-teeth prominent. Fruit ovate, somewhat flattened laterally, with narrow commissure; carpels turgid, becoming depressed on the back. Ribs and oil-tubes none. (Wm. Bowles, 1705-1780, Irish naturalist and traveler.)

1. *B. lobata* R. & P. Stems mostly branching at the base, weak and trailing, $\frac{1}{2}$ to 2 feet long, flowering from the base; leaves thin, mostly 5-lobed, broader than long, usually heart-shaped at base, the lobes entire or some of them 1 or 2-toothed, $\frac{1}{2}$ to 1 inch broad; petioles 1 to 3 inches long or the upper shorter; umbels 1 to 4-flowered; fruit 1 line long.—Shaded places in the hills: Coast Ranges; Sierra Nevada; Southern California. Eastward to Texas.

Locs.—Coast Ranges: San Leandro Creek, Alameda Co., *Kellogg*; Potrero Hills, San Francisco, *Kellogg*; Pacific Grove, *Heller* 6498. Sierra Nevada: betw. Mokelumne Hill and San Andreas, *F. E. Blaisdell*; Kaweah, *Hopping* 544. Southern California: Ojai Valley, *F. W. Hubby*; Playa del Rey, Los Angeles Co., *Braunton* 827; Santa Paula, *Benj. Cobb*; San Bernardino, *Parish*; Witch Creek, *Alderson*.

Refs.—BOWLESIA LOBATA R. & P. Prod. 44:t. 34 (1794); Fl. Peruv. 3:28 (1802); *Jepson*, Fl. W. Mid. Cal. 342 (1901). *B. septentrionalis* C. & R. Contrib. U. S. Nat. Herb. 7:31, fig. 3 (1900), type loc. near Tucson, Ariz., *Myrtle Zuck*.

12. CONIUM L.

Tall branching biennial with dissected decomound leaves. Flowers white, in compound umbels. Involucre and involuclerels small. Calyx-teeth obsolete. Fruit broadly ovate, somewhat laterally flattened. Ribs prominent. Oil-tubes none. (Greek name of the Hemlock.)

1. **C. maculatum** L. POISON HEMLOCK. Fig. 14. Tall (4 to 10 feet high), the stem dotted with purple marks; herbage with a mouse-like odor; leaves 1 to 2 feet long or more, the segments incised or pinnatifid; rays 10 to 16, $\frac{3}{4}$ to $1\frac{1}{4}$ inches long; bractlets ovate-lanceolate, commonly 3; fruit $1\frac{1}{2}$ lines long, shorter than the pedicels.—Native of Europe, naturalized in shady or moist ground. Widely distributed. A poisonous plant, all parts toxic, although preparations from the leaves are sometimes inert.

Locs.—Mokelumne Hill. *F. E. Blaisdell*; Truckee, *Sonne* in 1892; Yreka, *Buller* 924 in 1909; Falks Mill, South Fork Elk River, *Tracy* 4496 in 1914; Drake Bay, teste *Jepson* in 1900; Mormon Isl., *T. Brandegee* in 1884; Lake Merced, San Francisco, *Eastwood* in 1895; Alviso, *Jepson* 9318 in 1921; Arroyo Grande, *Alice King*; San Bernardino, *Parish* 12,001.

Refs.—CONIUM MACULATUM L. Sp. Pl. 243 (1753), type European; *Jepson*, Fl. W. Mid. Cal. 349 (1901).

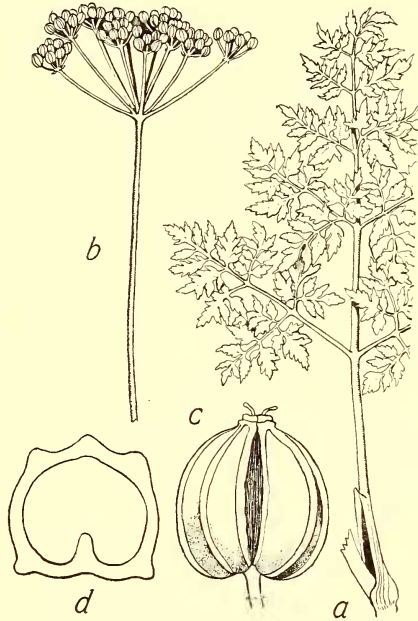
13. CORIANDRUM L.

Slender, glabrous, strong-smelling annual with leafy stems. Lower leaves pinnate or bipinnate with broad leaflets; upper leaves finely dissected. Flowers white or rose-tinted, the petals conspicuously unequal. Umbels compound. Involucre none. Involucels of few narrow bractlets. Fruit subglobose, not constricted at the commissure; calyx-teeth conspicuous; ribs filiform or acutish; oil-tubes solitary in the intervals, a few on the commissure. (Ancient Latin name.)

1. **C. sativum** L. CORIANDER. One to $2\frac{1}{2}$ feet high; leaflets of lower leaves roundish or ovate, cleft and toothed, $\frac{1}{2}$ to $1\frac{1}{4}$ inches long; divisions of upper leaves linear, 2 to 4 lines long; fruit $1\frac{3}{4}$ lines long.—Garden plant from Southern Europe, occasionally escaped from cultivation.

Locs.—San Diego (C. & R. Rev. N. Am. Umbell. 35); Anaheim, *Alice King* in 1908; Los Angeles (*Erythra* 1:59); Truckee, *C. F. Sonne*.

Refs.—CORIANDRUM SATIVUM L.



14. *Conium maculatum* L.; a, leaf x $\frac{1}{2}$; b, umbel x $\frac{1}{2}$; c, fr. x 6; d, sect. carp. x 10.

Sp. Pl. 1:256 (1753), type Italian.

14. ÆPIUM L.

Ours erect glabrous biennials with fibrous roots and pinnate leaves. Stems tri- or di-chotomously branched, forming a paniculate inflorescence, the compound umbels opposite the leaves, terminal on the branches or subsessile in the forks. Involucre and involucels small or none, or the former sometimes foliaceous. Flowers white. Calyx-teeth obsolete. Fruit elliptic-ovate or broader than long. Ribs prominent, obtuse, equal. Oil-tubes solitary in the intervals, 2 on the commissure. Seed-face plain. (Old Latin name of Celery.)

1. **A. graveolens** L. COMMON CELERY. Stems 2 to 4 feet high; lower leaves long-petioled, the leaflets 5 (or 7 or 9), 1 to 3 inches long and as broad or broader, coarsely toothed and 3-cleft or even -divided; upper leaves on short petioles or

sessile, the leaflets 3; rays 4 to 12 lines long; fruit $\frac{1}{2}$ to $\frac{3}{4}$ line long.—European garden plant; naturalized in marshes or along streams from Southern California to the Sacramento Valley. July-Aug.

Locs.—Ramona, *T. Brandegee*; Riverside, *Hall*; San Bernardino, *Parish*; Claremont, *Chandler*; Carmel River, *Jepson*; Los Angeles (*Erythraea* 1:59); South Berkeley, *Davy*; Suisun Marshes, *Jepson*.

Refs.—*APIUM GRAVEOLENS* L. Sp. Pl. 264 (1753), type European; *Parish*, *Zoe*, 1:9 (1890); *Jepson*, Fl. W. Mid. Cal. 350 (1901).

APIUM AMMI Urban, Fl. Bras. 11:341, pl. 91 (1879); C. & R. Contrib. U. S. Nat. Herb. 7:86, fig. 19 (1900); *Sison ammi* L. Sp. Pl. 252 (1753), type loc. Apulia, Egypt. Leaves ternate, the segments filiform; umbels sessile.—The only record for this is "California, *Douglas*, 1833," by *Coulter & Rose*, l. c., p. 87. This citation may be due to an error in herbarium records, or possibly the plant may have been a casual escape at a Mexican settlement at the time of *Douglas'* visit and did not persist. There is no other record of it and we have seen no California specimens.

Spermólepis Raf. Very slender glabrous annuals. Leaves finely dissected into filiform or linear segments. Umbels pedunculate, few-rayed; involucre none. Umbellets with very unequal pedicels; involucre present. Fruit ovate, flattened laterally, bristly-echinate, the bristles from tuberculate bases. Oil-tubes solitary in the intervals, 2 on the commissure. *S. ECHINATUS* Hel. Contrib. Herb. Franklin & Marshall College, 1:3 (1895). *Leptocaulis echinatus* Nutt. in DC. Prod. 4:107 (1830), type loc. Red River, Ark., *Nuttall*. Erect, dichotomously branching, $\frac{1}{3}$ to 1 foot high; fruit $\frac{1}{2}$ line long, with obsolete ribs.—Native of southeast U. S. Attributed to S. Cal. by *Coulter & Rose* (Contrib. U. S. Nat. Herb. 7:88), but they cite only a station in central Cal. (Oakland Hills, *Lemmon*.) Perhaps a transient escape or a case of mislabeling.

15. ÁMMI L.

Erect branching glabrous biennial with slightly fusiform roots and dissected decomound leaves. Flowers white, in compound umbels. Bracts parted into filiform segments, reflexed. Bractlets lanceolate, acuminate, spreading or reflexed. Calyx-teeth obsolete. Fruit ovoid, very slightly flattened laterally. Ribs filiform. Oil-tubes solitary in the intervals and 2 on the commissure. (Greek name of an umbelliferous plant.)

Leaf segments spatulate, serrate or laciniate; fruiting rays spreading 1. *A. majus*.
Leaf segments filiform or narrowly linear, entire; fruiting rays closely contracted . . . 2. *A. visnaga*.

1. **A. màjus** L. BISHOP'S WEED. Stem slender, branching above, $1\frac{1}{4}$ to $2\frac{1}{2}$ feet high; basal and lower leaves simply pinnate with 7 or 5 (or 3) obovate to oblong serrate leaflets $\frac{3}{4}$ to 3 inches long; upper leaves biternate or ternate-pinnate, the divisions narrowly oblanceolate, acute, laciniate or serrulate, especially at apex, about $\frac{1}{2}$ to 2 inches long; rays about 25 to 30, little unequal, $\frac{3}{4}$ to 2 inches long; pedicels 1 to $1\frac{1}{2}$ lines long; bracts linear below, parted above into 3 filiform divisions; bractlets lanceolate, acuminate, entire, scarious-margined at base; fruit less than 1 line long; carpels with concave face; oil-tubes solitary in the intervals, 2 on the commissure.—European weed, naturalized in the Napa Valley; low places.

Locs.—Yountsville, *Jepson* in 1893; Union sta., Napa Valley, *Jepson* 7435 in 1917; ne. of Salvador School near Napa River, *Jepson* 9066 in 1920.

Refs.—*AMMI MAJUS* L. Sp. Pl. 243 (1753); *Jepson*, Fl. W. Mid. Cal. 352 (1901).

2. **A. visnága** Lam. Stout, $\frac{1}{3}$ to $2\frac{3}{4}$ feet high; leaves tri-ternately dissected into filiform segments 3 to 6 lines long; fruiting umbels and umbellets contracted; fruit about 1 line long.—European plant, naturalized in the Santa Clara Valley.

Locs.—Saratoga, *Jepson* 5156 in 1912, *H. A. Dutton* in 1920.

Refs.—*AMMI VISNAGA* Lam. Fl. Fr. 4:362 (1778). *Daucus visnaga* L. Sp. Pl. 242 (1753), type south European.

16. *CARUM* L.

Ours erect and slender glabrous biennials or perennials. Leaves simply pinnate with few linear entire leaflets. Flowers white, in compound umbels. Involucre of entire bracts or none. Involucels of entire bractlets. Calyx-teeth small. Stylopodium conical. Fruit ovate or oblong, somewhat laterally compressed, with filiform or salient ribs. Oil-tubes solitary in the intervals, 2 to 6 on the commissure. (Karon, Greek name of the Caraway.)

Leaflets linear; involucre none or of 1 or 2 small linear-setaceous bracts; ribs filiform.

Stems clustered, arising from a fascicle of coarse roots; involucre inconspicuous, of 1 or 2 small bracts or none; styles short.....1. *C. kelloggii*.

Stems solitary, arising from a tuber or cluster of tubers; styles long.

Fruit about 1 line long; Sierra Nevada and coastal, common.....2. *C. gairdneri*.

Fruit $1\frac{1}{2}$ to 2 lines long; Siskiyou Co., rare.....3. *C. oregonum*.

Leaflets ovate to oblong; stem solitary, from a tuber or a cluster of tubers; bracts of the involucre about 12 to 15, lanceolate, at length reflexed; ribs salient.....4. *C. howellii*

1. *C. kelloggii* Gray. Fig. 15.

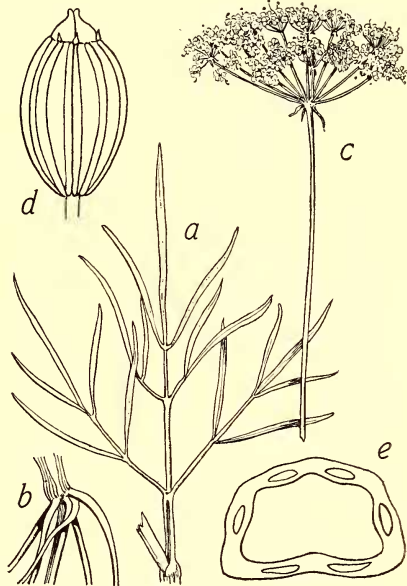
Stems several from a fascicle of coarse and hard fibrous roots, 3 to 5 ft. high; basal leaves 5 to 10 in. long, ternate, each division pinnate with narrowly linear divisions 3 to 4 in. long; cauline leaves similar but smaller; involucre bracts and involucre bractlets several, lanceolate or subulate; rays $\frac{3}{4}$ to $1\frac{1}{2}$ in. long; stylopodium very large, with short stout styles; carpels frequently unequal or only one maturing.—Dry open foothills, 100 to 500 ft.: Coast Ranges (Santa Clara Co. to Humboldt Co.); Sierra Nevada foothills (Tuolumne Co. to Butte Co.).

Locs.—Coast Ranges: Los Gatos, *Heller* 1535; Pt. Reyes, *Jepson* 1168; Fairfax Manor, Marin Co., *Jepson* 9490; Oakland Hills, *Jepson*; Vacaville, *Jepson*; Conn Valley, Napa Range, *Jepson* 6252 (dominant on 50 acres of the flat and in places nearly pure), 9071; Howell Mt., *Jepson*; Alton, Humboldt Co., *Tracy* 3999. Sierra Nevada: Hamilton sta. (Contrib. U. S. Nat. Herb. 7:103); New York Falls, Amador Co., *Hansen* 72; Ione, *Braunton* 1138; Shingle Sprs., *Kennedy*; Chico, *Heller* 11,678.

Refs.—*CARUM KELLOGGII* Gray, Proc. Am. Acad. 7:344 (1868), based on spms. from San Jose, *Brewer* 832, Oakland, *Bolander*, and Bolinas, *Kellogg*; *Jepson*, Fl. W. Mid. Cal. 352 (1901). *Ataenia kelloggii* Green, Pitt. 1:274 (1889).

Tax. note.—*C. kelloggii* and *C. gairdneri* grow on hillside spots which are very wet in winter and spring but excessively dry in summer and fall. On the western slopes of Howell Mt. colonies of these two species grow side by side. In *C. kelloggii* the umbel is convex, the flowers are dull white or sordid and the pedicels of the umbellets are spreading in fruit; in *C. gairdneri* the umbel is flat, the flowers are clear white and the pedicels of the umbellets are approximate in fruit.

2. *C. gairdneri* Gray. SQUAW-ROOT. Fig. 16. Stem solitary, 1 to $3\frac{1}{2}$ ft. high, from a tuberous root or a fascicle of such; leaves few, simply pinnate, the leaflets 3 to 7 (or 9), linear, 2 to 4 in. long; upper leaves mostly simple; flowering



15. *Carum kelloggii* Gray; a, leaf $\times \frac{1}{3}$; b, root $\times \frac{1}{3}$; c, umbel $\times \frac{1}{3}$; d, fr. $\times 2\frac{1}{2}$; e, sect. carp. $\times 7$.

rays 3 to 6 lines long, in fruit about twice as long; involucre of 1 or 2 linear acute bracts or none; involucels of few linear acuminate bractlets; fruit broadly oblong to elliptic or ovate, 1 to $1\frac{1}{2}$ (or 2) lines long; stylopodium low, with long slender styles.—Adobe flats or meadows or hills; Coast Ranges from Monterey Co. to Siskiyou Co.; Sierra Nevada from Tulare Co. to Butte Co., gregarious and often whitening the moist meadows at 3000 to 7000 ft.

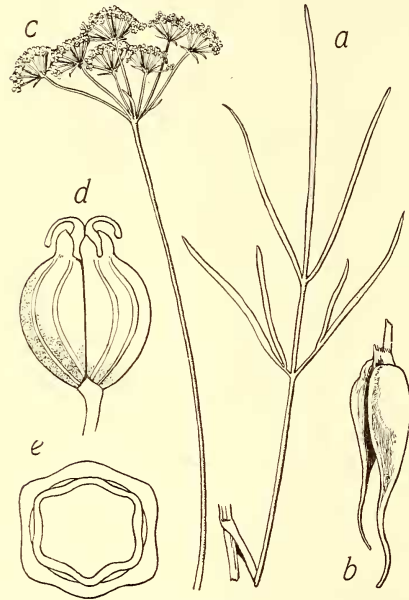
Econ. Note.—The tubers and the young shoots were used as food by the Pomos, in both cases being eaten raw. Doubtless other native tribes made similar use of them.

Locs.—Coast Ranges: Cypress Point, Monterey, *Jepson*; Pt. Joe, Monterey, *Jepson* 9743; Oakland Hills, *Jepson*; Lake Lagunitas, Marin Co., *Jepson* 9498; Howell Mt., *Jepson* 1726; Conn Valley, Napa Range, *Jepson*; Elk Mt., n. Lake Co., *Tracy* 2342; Eureka, *Tracy* 969; Sisson, *Jepson*; Yreka, *Buller* 925. Sierra Nevada: Butte Mdws., *Heller* 11, 649; Little Tule River, *Purpus* 5632; Kely Md., Madera Co., *Kennedy*; Hetch Hetchy, *A. L. Grant* 870 (fruit 2 lines long); Yankee Hill, Columbia, *A. L. Grant* 557; Kennedy Md., Tuolumne Co., *A. L. Grant* 461; Eagle Creek, Tuolumne Co., *A. L. Grant*; Duffield Cañon, Soulsbyville, *Jepson* 7689; Riverton, El Dorado Co., *K. Brandegee*; Truckee, *Sonne*; Lake Independence, *Jepson* 8068; Sierra Valley, *Jepson* 8041; Martin Sprs., Eagle Lake, *Brown & Wieslander* 15.

Refs.—*CARUM GAIRDNERI* Gray, Proc. Am. Acad. 7:344 (1868), based on spms. from Ebbetts Pass (*Brewer*), Yosemite (*Bolander*), and near Carson City (*Anderson*); *Jepson*, Fl. W. Mid. Cal. 352 (1901).

C. LEMMÓNII C. & R. Bot. Gaz. 14:283 (1889), type loc. "Tuolumne forest" (near Crocker's Sta.), *Lemmon*. Obscure and little understood. It would appear to be difficult to distinguish it from *Eulophus parishii* C. & R. in the flowering stage.

3. *C. oregonum* Wats. Resembling *C. gairdneri* Gray; leaves more divided with shorter leaflets; fruit $1\frac{1}{2}$ to 2 lines long; seed sulcate



16. *Carum gairdneri* Gray; a, leaf x $\frac{1}{2}$; b, root x $\frac{1}{2}$; c, umbel x $\frac{1}{2}$; d, fr. x 8; e, sect. carp. x 16.

beneath the oil tubes.—Siskiyou Co. North to British Columbia

Loc.—Mt. Shasta acc. *Coulter & Rose* (Contrib. U. S. Nat. Herb. 7:105, fig. 27).

Ref.—*CARUM OREGANUM* Wats. Proc. Am. Acad. 20:368 (1885), type loc. Wappatoo Isl., Ore., *Nuttall*. *Ataenia oregana* Greene, Pitt. 1:274 (1889).

4. *C. howellii* C. & R. Fig. 17. Stem stoutish, $2\frac{1}{2}$ to $4\frac{1}{2}$ ft. high, arising from a heavy cluster of very stout very fibrous fusiform roots; leaves bipinnate, mostly lanceolate in outline; leaflets crowded, broadly oblong to ovate, acute, coarsely but sparingly serrate or sparingly incised, $\frac{3}{4}$ to $1\frac{1}{4}$ in. long; rays 16 to 40, $\frac{3}{4}$ to $2\frac{3}{4}$ in. long in fruit; pedicels 2 to 5 lines long; bracts several, narrowly lanceolate; reflexed, 8 to 12 lines long; bractlets similar, mostly reflexed, nearly as long as the pedicels, scarious-margined; fruit 2 lines long; ribs thick-based, acute.—Moist mountain meadows, 2000 to 3600 ft.: Mariposa Co. to Nevada Co.: Mendocino Co. to Siskiyou Co. North to Oregon.

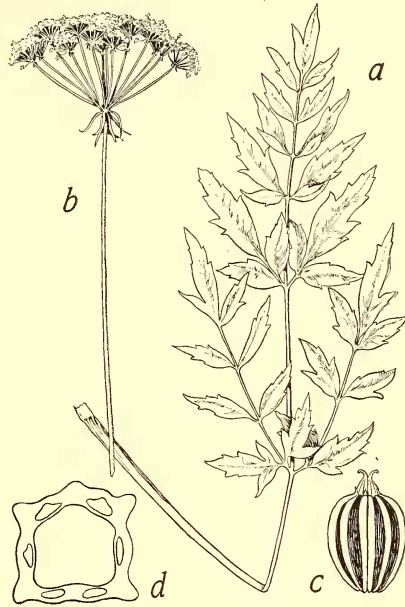
Econ. Note.—While all our *Carum* species are eaten by cattle this species is especially relished; and apparent scarcity may be due to the fact that it is a valued forage plant. Specimens, especially fruiting specimens, are seldom seen in herbaria.

Locs.—Mariposa Co., *Congdon* (Westfalls, Wawona and Darrah); Bear Valley, Nevada Co., *Jepson*; Long Valley, Mendocino Co., *C. S. Myszka*; Murphy Mdw., Bald Mt., Humboldt Co., *Tracy* 4832; Sisson, *Jepson* 6157.

Refs.—*CARUM HOWELLII* C. & R. Rev. N. A. Umbell. 129 (1888), type loc. Grants Pass, Ore., *Howell* 710. *Ataenia howellii* Green Pitt. 1:274 (1889). *Taeniolepturum howellii* C. & R. Bot. Gaz. 14:284 (1889); C. & R. Contrib. U. S. Nat. Herb. 7:102, fig. 26 (1900).

17. *EÜLOPHUS* Nutt.

Glabrous erect perennials with deep-seated fascicled tubers, the leaves all basal or the cauline few and small. Leaves compound with the terminal segments or leaflets often differing markedly from the lateral ones; lateral leaflets linear and entire, rarely ovate or oblong and incised; terminal leaflet elongated, always entire and often caudate. Flowers white or pinkish. Umbels compound, long-peduncled. Bracts of involucre and bractlets of involucre similar, several, lanceolate to obovate, acuminate. Calyx-teeth prominent. Fruit ovate to linear-oblong, flattened laterally. Ribs filiform, equal. Stylopodium conical, with long strongly recurved or deflexed styles. Oil-tubes 1 to 5 in the intervals, 4 to 8 on the commissure. Seed-face broadly concave, with a central longitudinal ridge. (Greek eu, true, and lophus, crest, in reference to the salient terminal leaflet.)



17. *Carum howellii* C. & R.; a, leaf x $\frac{1}{2}$; b, umbel x $\frac{1}{2}$; c, fr. x 3; d, sect. carp. x 8.

Terminal leaflet commonly much longer than the lateral ones.

Rachis of the leaves not dilated.

Oil tubes solitary in the intervals; fruit 3 to 4 lines long.....1. *E. californicus*.

Oil tubes more than one in the intervals (as also in nos. 3 to 5); fruit 2 lines long.....2. *E. bolanderi*.

Rachis of the leaves dilated, the segments few and mostly short.....3. *E. pringlei*.

Terminal leaflet similar to the lateral ones; leaflets 1 to 3 in. long.

Bractlets narrowly lanceolate.....4. *E. parishii*.

Bractlets ovate, cuspidate.....5. *E. cuspidatus*.

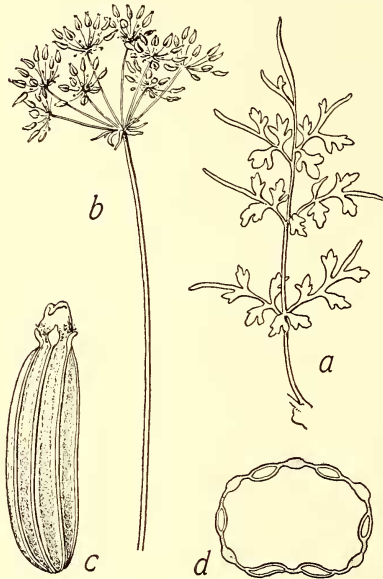
1. *E. californicus* (Torr.) C. & R. Fig. 18. Stems generally 1 to 3, 3 to 5 ft. high; leaves basal, twice or thrice ternate, then pinnate or pinnately divided, the segments or leaflets ovate, 3 to 7 lines long, incised or serrate, the terminal leaflet linear-elongated, entire, $\frac{1}{2}$ to 2 in. long; fruiting rays 1 to $2\frac{3}{4}$ in. long; fruit linear-oblong, 3 to 4 lines long; oil-tubes large, solitary in the intervals, sometimes an extra one in one of the intervals, 4 on the commissure.—Along streams, Sierra Nevada foothills from Stanislaus Co. to Mariposa Co.; Mt. Hamilton Range.

Locs.—White's Gulch, Mariposa Co., *Congdon*; Arroyo Hondo, Mt. Day, *R. J. Smith*.

Var. *SANCTORUS* Jepson n. var. Lateral segments narrower, disposed to be unilaterally or unequally lobed.—Southern Monterey Co. (San Carpojo, *J. J. Condit*).

Refs.—*EULOPHUS CALIFORNICUS* C. & R. Rev. N. A. Umbell. 114 (1888). *Chaerophyllum* (?) *californicum* Torr. Pac. R. P. Rep. 4⁵:93 (1856), type loc. Knight's Ferry, Stanislaus Co., *Pigelow*.

2. *E. bolánderi* (Gray) C. & R. Plants 1 to 2 ft. high; tubers 1 to 8, obfusiform or oblong; herbage glabrous; leaves once, twice or thrice ternate, the ultimate lateral ones linear, the divisions 2 to 12 lines long, the ultimate central division 1 to 3 in. long; fruiting rays 4 to 10 lines long; pedicels $1\frac{1}{2}$ to 2 lines long; bracts few, lanceolate, scarious, or none; bractlets several, narrowly to ovate-lanceolate, abruptly acuminate, scarious, rather shorter or sometimes longer than the pedicels; fruit oblong, 2 lines long, oil-tubes minute, 2 to 5 in the intervals, 6 on the commissure.—Sierra Nevada and Yollo Bolly Mts., 6000 to 9000 ft. Northward to Oregon and Idaho.



18. *Eulophus californicus* C. & R.; *a*, leaf $\times \frac{3}{8}$; *b*, umbel $\times \frac{3}{8}$; *c*, fr. $\times 5$; *d*, sect. carp. $\times 9$.

Portola, Plumas Co., *K. Brandegee*; Ft. Bidwell, *Manning*; Bald Mt., ne. Shasta Co., *Hall & Babcock* 4257; South Yollo Bolly, *Jepson*. Some of "b" pass into the var. *BENIGNUS* Jepson n. var. Leaflets filiform-linear, 1 to 2 in. long, essentially alike.—Hetch Hetchy, *A. L. Grant* 870 (type).

Refs.—*EULOPHUS BOLANDERI* C. & R. Rev. N. Am. Umbell. 112 (1888). *Podosciadium bolanderi*, Gray, Proc. Am. Acad. 7:346 (1868), type loc. Mariposa Trail, Yosemite, *Bolander*.

3. *E. pringlei* C. & R. Stem 1 to $1\frac{1}{2}$ ft. high; leaves pinnately compound with broad inflated midrib, the primary divisions once or twice pinnately divided into few linear-filiform or linear-subulate segments 1 to 6 lines long, the terminal segment 2 to 10 lines long; rays 5 to 10, $\frac{1}{2}$ to $1\frac{1}{2}$ in. long; pedicels 1 to 2 lines long; involucre of 1 or 2 very small bracts; involucels of several subscarious lanceolate bractlets 1 to 2 lines long; fruit oblong, 2 to $2\frac{1}{2}$ lines long; oil-tubes

(To be continued)